MICE Activities at LBNL

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NFMCC Friday Meeting
August 5, 2005

Introduction

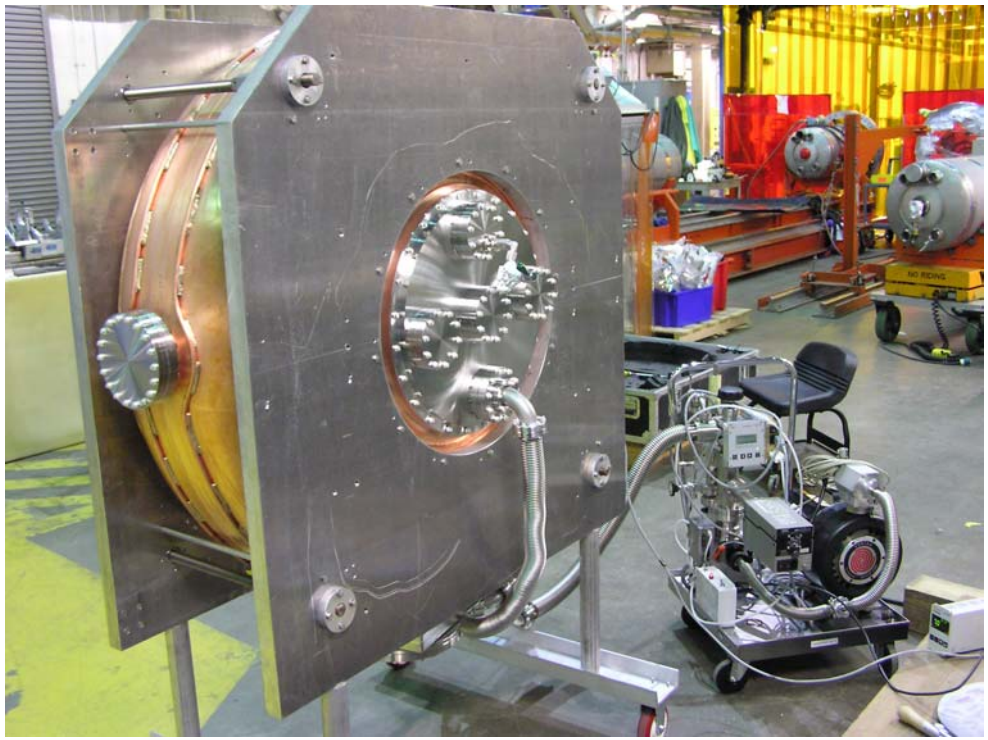
- LBNL has substantial technical responsibilities in MICE
  - RF cavity design, development, and fabrication
  - coupling coil design
    - RFCC module to be designed and provided by LBNL…maybe with help
  - spectrometer solenoid design and fabrication
    - includes supports, radiation shield, magnetic shield(s)

- MUTAC review noted that spectrometer solenoid is a drain on resources and delays other items
  - the price we had to pay to get MICE Phase 1 approved in the UK

- Also heavily involved in MUCOOL RF R&D and ISS

RF Cavity Progress (1)

- **Cavity assembled for leak check earlier this week**
  - **found large leak in sealing window that needed re-work**
    - **should be done and back on the pump later today**



RF Cavity Progress (2)

- Cavity dummy windows (Cu) coated with TiN (both sides)

- Schedule
  - pump over the weekend (8/6-7)
  - leak-check on Monday (8/8)
  - pack up in custom crate Tuesday/Wednesday (8/9-10)
    - depending on whether we find leaks
  - ship Wednesday or Thursday (8/10-11)

Spectrometer Solenoid Progress

- **Responsibility for spectrometer solenoid a relatively recent development**
  - be careful what you wish for!
  - came with responsibility for radiation shield and magnetic shield(s)

- **We need to move quickly on this**
  - pacing item for completing MICE Phase 1
  - aim for delivery of at least one magnet by October 2007
    - this will be difficult
  - limit is not really technical, but "cash-flow"

Spectrometer Solenoid Activities (1)

- **Design support system for magnet**
  - present drawing is just a cartoon
  - envision system similar to that for RFCC module
  - take forces to the floor to accommodate all possible variations of experimental configurations
    - rigid design is most flexible ☺
- **Evaluate impact of increasing cryostat dimensions to same value as other modules**
  - suggested long ago by Ed Black
  - has impact on radiation shield design
  - has slight impact on magnetic shielding design
- **Modifying coil dimensions to use CC/FC conductor**

Spectrometer Solenoid Activities (2)

- Preparing change request for updated spectrometer solenoid design
  - need to get conductor specification approved so we can buy material
  - different coils, supports, dimensions
    - other than that it's identical to the original
- Examining alternative funding profiles
  - explore possibility of getting "cash advance" from UK, with subsequent repayment, to speed things up
    - just a concept at this point; no guarantee this is practical

Other Activities

- Working with UK industry on joint fabrication of RF cavities
- Exploring option of fabricating CC in Switzerland
  - early days, no guarantee this will converge
- Involved in International Scoping Study (ISS)
  - I hope you will be too!
- Documenting RF cavity design and "lessons learned" from this first effort
  - MICE will benefit from this

Summary

- Lots to do
  - getting some help from Oxford engineers
  - and from Imperial College London
- Funding is still an issue
  - guidance for next year is flat-flat ($3.6M)
- LBNL work carried out by Mike Green, Derun Li, Bob MacGill, Steve Virostek
  - a good group of people!
  - they were not alone:
    - help from Wing Lau and Stephanie Yang (Oxford) on mechanical design has been invaluable
    - help from Graham Gosling (ICL) on RF cavity manufacture
    - help from Bob Rimmer and Larry Phillips in overseeing the prototype cavity fabrication was critical to our success